

What is claimed is:

1. A method of forming a semiconductor thin-film, comprising:

irradiating a first laser beam to a semiconductor thin-
5 film to form a first irradiated region; and

irradiating a second laser beam to the thin-film in
such a way as not to overlap with the first irradiated region,
thereby forming a second irradiated region and a non-
irradiated region;

10 wherein the second laser beam is irradiated to the
thin-film to be coaxial with the first laser beam;

and wherein an alignment mark is formed by using an
optical constant difference between the second irradiated
region and the non-irradiated region.

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2. The method according to claim 1, wherein the second laser
beam is controlled in such a way that the second irradiated
region is solid.

20 3. The method according to claim 1, wherein the second laser
beam is controlled in such a way that the second irradiated
region is hollow due to ablation.

4. The method according to claim 1, wherein the first

irradiated region serves as an annealed semiconductor region,
in which an active region of a TFT is formed.

5 5. The method according to claim 1, wherein the semiconductor
thin-film is made of a-Si (amorphous silicon).

6. The method according to claim 1, wherein the semiconductor
thin-film is made of poly-Si (polysilicon).

10 7. The method according to claim 1, wherein an excimer laser
is used to generate the first laser beam.

8. A method of forming a semiconductor thin-film, comprising:
 irradiating a first laser beam to a semiconductor thin-

15 film to form a first irradiated region; and

 irradiating a second laser beam to the thin-film in
such a way as to overlap with the first irradiated region,
thereby forming a second irradiated region;

 wherein the second laser beam is irradiated to the
20 thin-film to be coaxial with the first laser beam;

 and wherein an alignment mark is formed by using an
optical constant difference between the first irradiated
region and the second irradiated region or between the second
irradiated region and a remaining non-irradiated region of the

thin-film.

9. The method according to claim 8, wherein the second laser beam is controlled in such a way that the second irradiated
5 region is solid.

10. The method according to claim 8, wherein the second laser beam is controlled in such a way that the second irradiated region is hollow due to ablation.

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11. The method according to claim 8, wherein the first irradiated region serves as an annealed semiconductor region, in which an active region of a TFT is formed.

15 12. The method according to claim 8, wherein the semiconductor thin-film is made of a-Si (amorphous silicon).

13. The method according to claim 8, wherein the semiconductor thin-film is made of poly-Si (polysilicon).

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14. The method according to claim 8, wherein an excimer laser is used to generate the first laser beam.

15. A method of forming a semiconductor thin-film, comprising:

irradiating a first laser beam to a whole semiconductor thin-film to form a first irradiated region; and

irradiating a second laser beam to the thin-film in such a way as to overlap with the first irradiated region,
5 thereby forming a second irradiated region;

wherein the second laser beam is irradiated to the thin-film to be coaxial with the first laser beam;

and wherein an alignment mark is formed by using an optical constant difference between the first irradiated
10 region and the second irradiated region.

16. The method according to claim 15, wherein the second laser beam is controlled in such a way that the second irradiated region is solid.

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17. The method according to claim 15, wherein the second laser beam is controlled in such a way that the second irradiated region is hollow due to ablation.

20 18. The method according to claim 15, wherein the first irradiated region serves as an annealed semiconductor region, in which an active region of a TFT is formed.

19. The method according to claim 15, wherein the

semiconductor thin-film is made of a-Si (amorphous silicon).

20. The method according to claim 15, wherein the semiconductor thin-film is made of poly-Si (polysilicon).

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21. The method according to claim 15, wherein an excimer laser is used to generate the first laser beam.

22. A laser apparatus comprising:

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a movable stage on which a target is placed;

a first laser beam generator for generating a first laser beam;

the first laser beam being configured by a first optical system to be irradiated to a semiconductor thin-film

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as the target on the stage;

a second laser beam generator for generating a second laser beam; and

the second laser beam being configured by a second optical system to be irradiated to the thin-film in such a way

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as to be coaxial with the first laser beam.

23. The apparatus according to the claim 22, wherein the first laser beam generator and the second laser beam generator are different in size from each other.

24. The apparatus according to the claim 22, wherein an excimer laser is used as the first laser beam generator.

5 25. The apparatus according to the claim 22, wherein the second optical system for the second laser beam includes an optical element movable between a first position in an optical path of the first laser beam and a second position outside the same optical path.

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26. The apparatus according to the claim 25, wherein when the first laser beam is irradiated to the target, the element is in the second position;

and wherein when the second laser beam is irradiated to
15 the target, the element is in the first position.